

mandibular barbels with short simple branches; anterior mandibular teeth very short, 40 to 42. Adipose dorsal 4 times as long as deep, $2\frac{1}{2}$ to $3\frac{1}{2}$ times as long as its distance from the rayed dorsal. Humeral process narrow, keeled, sharply pointed. Body covered with granular papillæ. Olive above, yellowish beneath; dorsal, anal, and paired fins black in front, orange behind; caudal black, edged with orange.

Total length 230 millim.

North end of Lake Tanganyika.

LXV.—*Note on Diatoms from Chíncha Guano.*

By C. MERESCHKOWSKY.

[Plate XVI.]

I HAVE, through the kindness of Mr. E. Thum, of Leipzig, been provided with a very interesting slide containing a great number of Diatoms from Chíncha guano (in Peru). Having carefully studied the various forms which it contains and determined the species so far as possible with the aid of the few books at my disposal, I give in the present note a list of forty-one forms accompanied by a few remarks concerning several of them and by the description of some new species and varieties.

The majority of Diatoms of which the Chíncha guano material is composed belong to the group Anaraphidiæ or Cryptoraphidiæ. Different kinds of *Biddulphia*, small species of *Coscinodiscus* and *Chatoceros*, represented by a great number of species, form the greatest bulk of this material. There are only a few representatives of the group Raphidiæ and still fewer belonging to the group Pseudoraphidiæ, or Bacilloidæ, as I propose to call this group*.

1. *Diploneis vacillans*, var. *delicatula*, Cl. Very rare.
2. *Navicula Henedyi*, var. *subrostrata*, nov. var. (Pl. XVI. fig. 14.) Very rare.

Size small, length 0.044 mm., breadth 0.025 mm.: valve elliptic, with slightly rostrate apices; lateral areas moderately

* In a note which will soon be published I have separated the Nitzschioidæ and Surirelloidæ from the rest of the Pseudoraphidian Diatoms, and given to the latter the name Bacilloidæ, while the former have been united in a new group called Carinate.

large, smooth, with almost parallel internal margins; marginal striæ 11 in 0·01 mm., axial striæ 13-14 in 0·01 mm. Puncta indistinct.

Among the numerous varieties of this species enumerated by Cleve * there is not a single one which is described as having valves with rostrate ends. I think therefore that the above-described form belongs to a new variety. From its small size it might be referred to the *varietas minuta*, Cl. (size, according to Cleve, 0·027-0·05 mm.), or the *varietas tahitensis*, Cl. (size 0·04-0·045 mm.); but as Cleve does not give in his 'Synopsis of the Naviculoid Diatoms' a sufficient description of these two varieties and I do not possess his work 'On New and Rare Diatoms,' where they are figured, it is impossible for me to ascertain whether it is so or not. It seems, however, not very probable that this form belongs to the first variety on account of the striæ, which are here 11 in 0·01 mm., while in the *varietas minuta* they are 8-10 in 0·01 mm. The same reason makes it even more improbable that the above-described variety belongs to the *varietas tahitensis*, which has 13-14 marginal striæ. From Tahiti I know another variety of *Navicula Henedyi*, the valves of which have also subrostrated apices; but this latter (Pl. XVI. fig. 15) differs from the *varietas subrostrata* in the lateral areas, which are of a somewhat different shape, their interior margins being divergent; the ends of the valve are also more or less elevated. I will give the description of the variety from Tahiti in a future note on Polynesian Diatoms; I give here the figure of the latter in order to make the comparison of both forms easier.

3. *Trachyneis aspera*, Ehr. Rather rare.

4. *Pleurosigma nicobaricum*, Grun. Rare.

Cleve, in his 'Synopsis of the Naviculoid Diatoms' †, attributes to this species a length of 0·14 mm. I have seen a specimen attaining 0·267 mm. in length, with a breadth of 0·036 mm., not differing in other respects from the description which Cleve gives of this species.

5. *Cocconeis costata*, var. *pacifica*, Grun. Very rare.

6. *Cocconeis scutellum*, Ehr. Rather rare.

* Cleve, 'Synopsis of the Naviculoid Diatoms,' part ii. p. 58.

† *L. c.* part i. p. 36.

7. *Grammatophora angulosa*, Ehr. Very rare.

There exist at least two different forms similar in their general aspect, but differing in the striae, which are usually confounded. In one of them the striae are distinctly seen under a moderately high magnifying-power (12-14 striae in 0.01 mm.), while in the other they are invisible under such conditions (about 20 striae in 0.01 mm.). The Chincha form belongs to the latter, which I consider to be the genuine *G. angulosa*, the other belonging to a quite different species.

8. *Grammatophora maxima*, Gran. Rare.

This species has been found hitherto, so far as I know, only in a fossil state in Californian deposits (Redondo, Santa Monica, San Pedro, Monterey, &c.). I have seen several beautiful specimens in the Chincha guano, and it is also sometimes to be found in a living state in California.

9. *Sceptroneis caduceus*, Ehr. Rare, and always in a broken condition.

Attains a large size, over 0.1 mm.

10. *Chætoceros bicoronata*, sp. n. Very rare.

Of this species I have seen only a single endocyst, which in its general outlines, as well as in the disposition of the awns, resembles greatly the endocysts of *C. seiracanthus*, Gran, recently described by H. Gran*. It differs essentially from the latter in having a corona of spines not only on one of the margins of the median part of the endocyst, but on both; the spines are also much stronger than represented in the figures of Gran. Unfortunately I neglected to make a drawing of this species at the time I found it, and afterwards I did not meet with it again.

11. *Chætoceros borealis*, Bail. Rare.12. *Chætoceros chinchæ*, sp. n. (Pl. XVI. figs. 3-7.) Not very rare.

Of this species I know only the endocysts, which have a very peculiar appearance. Their form is elongated elliptical, with rounded ends; the margins are provided with short, more or less irregular spines, which become shorter towards

* H. Gran, in 'Norske Nordhavs-Expedition,' plate iii. figs. 40, 41.

the ends of the valve; they do not form any regular row, as in other species, but are disposed at rather variable intervals one from another, and their apices are usually not very acute, often bent in a hook, sometimes bifid (fig. 6). The surface of the valve shows very peculiar, coarse, irregularly contorted lines or markings, resembling somewhat Arabic inscriptions or shorthand writing signs; these markings are sometimes distributed all over the surface of the valve, and in this case the diatom has a striking resemblance to *Liradiscus ovalis*, Grev., the more so as the general outlines of both are nearly the same*; but usually the lines or markings are not so numerous, sometimes even more scantily represented than in the figure 4, and sometimes there are only a few of them, as shown in the figure 5. As will be seen from fig. 7, these lines or markings are irregular membranaceous ribs elevated over the surface of the valve.

Length: 0.024 0.0245 0.0265 0.027 0.031 0.042 0.042 0.049
 Breadth: 0.013 0.014 \times 0.0145 \times 0.014 \times 0.015

13. *Chætoceros diadema* (Ehr.), Gran. Common.

A very characteristic species, of which I have seen not only the endocysts, but the frustules also. Filaments of this species with endocysts enclosed in their cellules have been recently observed and figured by H. Gran †.

14. *Chætoceros didymus*, Ehr. Very common.

15. *Chætoceros incurvus*, Bail. Rather rare; known only by its endocysts. (Pl. XVI. figs. 1, 2.)

This very peculiar species is easily recognized by the disposition of the four awns with which the endocysts are provided. The figures given by Brightwell are correct as to their general outlines, but this author has failed to represent the granulation of the surface of the valves; the granules are small and irregularly scattered over the whole surface of the body of the endocysts (figs. 1, 2). In the above-cited work of H. Gran we find the description of a new species of *Chætoceros*—the *Chætoceros cinctus*, Gran, which has endocysts very similar to those of *C. incurvus*, Bail. ‡, differing

* It would not be surprising if *Liradiscus* should prove to be the endocyst of some unknown species of *Chætoceros*.

† H. Gran, in 'Norske Nordhavs-Expedition,' plate ii. fig. 18.

‡ H. Gran, l. c. plate ii. figs. 23-27.

only in the greater relative length of the awns and the size, which seems to be larger; the surface of the endocysts is also granulated. It might represent only a variety of *C. incurvus*.

I give here some measurements of the latter:—

General length :	0.023	0.028	0.029	0.027	×
Length of the valve :	0.014	0.019	0.019	0.0195	0.021 .
Breadth of the valve :	×	0.010	0.010	0.009	0.0115

16. *Chaetoceros Lorenzianus*, Grun. Very common.

17. *Chaetoceros peruvianus*, Brightw. Rare.

There are a few more species of this genus, which, however, I was unable to determine.

18. *Rhizosolenia styliiformis*, Brightw. Very common.

19. *Skeletonema costatum* (Grev.), Cl. Very common.

20. *Skeletonema costatum*, var. *spiralis*, var. nov. (Pl. XVI. fig. 8.) Not rare.

Differs from the type only in the oblique disposition of the spines, which unite the frustules together; the degree of inclination of the spines is variable, and there are always some frustules in the same filament whose spines are straight, as in the type species.

Although *Skeletonema costatum* is known to me from very different localities all over the world, I have never before seen such a spiral disposition of the spines; it seems therefore advisable to regard the present form as a separate variety.

21. *Eucampia zodiacus*, Ehr. Rather rare.

22. *Biddulphia* (*Triceratium*) *alternans*, Bailey. Very common.

23. *Biddulphia* (*Triceratium*) *alternans*, var. *variabilis*, Brightw. Rare.

These two forms are generally regarded as belonging to two distinct species—the second being characterized by the irregular form of the valve, its concave margins and the acute apices of the three ends; the first having a regular form, straight margins, and broadly rounded apices. The examination of both of these species from Chincha guano, in which

the first (*B. (T.) alternans*) is very frequent, has shown me without any doubt that they cannot be considered two different species, being connected one with the other by all possible intermediate forms. Usually the *B. (T.) alternans* has regularly triangular valves, with the three apices of equal length; but there occur forms in which, while one or two apices are broadly rounded, as in the type species, the other one (or sometimes two) is acute and has the peculiar irregular appearance which characterizes the *varietas variabilis*.

In figs. 9, 10, I have represented some of these intermediate forms. As to the structure of the valve, it is identical in both, and their size is also the same.

B. (T.) alternans being the more common form, I regard it as the type species and the other as its variety.

24. *Cyclotella striata* (Kütz.), Grun. Rare.

Diameter from 0.0185 to 0.031 mm.

25. *Auliscus sculptus*, var. *cœlata*, Bail. Rare.

The only specimen observed agreed pretty well with the figure of Bailey.

26. *Actinoptychus undulatus*, Ehr. Not very rare.

Often with a small process placed on the submarginal median portion of each alternate compartment, sometimes of all compartments.

27. *Actinoptychus areolatus*, Brightw. Rather rare.

Seems to be only a variety of the preceding species.

28. *Actinoptychus splendens* (Schadb.), Ralfs. Rare.

29. *Asteromphalus flabellatus* (Bréb.), Grev. Not very rare; a widely distributed species.

30. *Asteromphalus heptactis* (Bréb.), Ralfs (Pritchard, Inf. pl. viii. fig. 21; *Spatangidium Ralfsianum*, Norm. Micr. Journ. vii. (1859), pl. vii. figs. 7, 8; *Asteromphalus Ralfsianus*, A. Schmidt, Atlas, pl. xxxviii. figs. 5-8)*. Rather rare.

* The above-cited synonyms are given after Cleve, "Report on the Phyto-Plankton collected on the Expedition of H.M.S. 'Research,' 1896," Fifteenth Annual Report of the Fishery Board for Scotland, part iii. p. 297.

31. *Asteromphalus malleus* (or *malleiformis*), Wall., var. *pacifica*, var. nov. (Pl. XVI. figs. 11, 12.) Not very rare.

Valve almost circular or slightly ovoid, with the upper part (containing the median ray) a little narrowed. The median ray is placed more or less asymmetrically, forming an acute angle with the longitudinal axis; its central part is conical; 8 rows of puncta in 0.01 mm., the puncta bordering the rays being a little larger than the others.

Length: 0.043 0.046 0.051 0.057

Breadth: 0.041 0.0455 0.050 0.057

This diatom greatly resembles the type species from the Indian Ocean which has been described by Wallich, differing from it in the central part of the median ray. In the type species this central part is quadrangular, with a deep constriction in the middle, dividing it into two parts of equal size and shape; in the var. *pacifica* this part has never such an appearance, being of a more or less conical form. In order to show more clearly this difference I have reproduced in the fig. 13 the type species as given by Wallich.

Although this difference is very constant, occurring in all specimens which I have observed, and there is another difference consisting in the asymmetry of the median ray, still it seems to me that these characteristics are too trifling to be of any specific value. I think it therefore more reasonable to consider the Pacific form simply a variety of the Indian species.

32. *Asteromphalus variabilis*, Grev. Very rare.

Resembles exactly figure 7 of Greville, but has distinct puncta, which are, I suppose, omitted in Greville's figures.

33. *Coscinodiscus radiatus*, Ehr. Rare.

34. *Coscinodiscus radiatus*, var. *asteromphala*, Ehr. Very rare.

The large central alveoles surrounding a small hyaline circular spore are provided with elongated puncta along their periphery.

35. *Coscinodiscus excentricus*, Ehr. Very common.

36. *Coscinodiscus gigas*, Ehr. Rather common.

37. *Coscinodiscus perforatus*, var. *cellulosa*, A. S. Rare.

38. *Coscinodiscus polyacanthus*, Grun. Not rare.

Resembles *C. subtilis*, but has numerous marginal spines.

39. *Coscinodiscus subconcauus*, Grun. Not very rare.

40. *Coscinodiscus subtilis* (Ehr. ?), Grun. Rare.

Without marginal spines.

41. *Spermatogonia antiqua*, Leud. & Fortmorel. (Pl. XVI. figs. 16-21.) Not rare.

This curious form, as to the nature of which there still exist some doubts, was originally found in Java; but it seems to be a widely distributed species. Besides the Chincha guano, I have observed it in New Guinea (Tami Islands) and very often among diatoms from the Adriatic Sea (Triest), and Cleve has recently found it in the Plankton of the Atlantic Ocean*.

The inflation at the lower end is not triangular, as described by Leudiger and Fortmorel, but has exactly the form of the head of a human spermatozoon. The frustule is usually not straight, but more or less sigmoidally bent. The upper part is enlarged and terminates in a point; one margin of the enlarged portion is more straight, the other is always convex, sometimes angular (fig. 17). The striæ are not capitate, as described by the authors, this appearance being due to the fact of their crossing the double outlines of the frustule. It might be that the striæ are superficial ribs, which give to the margins a somewhat indented appearance of the same kind as in *Thalassiothrix*, although in a much lesser degree. The number of striæ is 8 in 0.01 mm.; they gradually disappear near the lower end. Figure 21 represents a small and straight individual with an obscure longitudinal line which might possibly be a kind of keel.

Length:	0.096	0.118	0.126	0.152	0.161	×
Breadth:	0.003	0.0024	0.0035	0.004	0.004	0.005

The Chincha guano contains also a form known as *Actiniscus sirius*, Ehr., which, however, is not a diatom, but

* Cleve, 'A Treatise on the Phytoplankton of the Atlantic and its Tributaries' (Upsala, 1897), p. 25.

rather belongs to the so called Silico-Flagellatæ. I have found this same form in California and in the Mediterranean.

EXPLANATION OF PLATE XVI.

- Figs. 1, 2. *Chetoceros incurvus*, Bail. Endocysts.
 Figs. 3-7. *Chetoceros chincheæ*, Mer. Endocysts. (Fig. 6 in a somewhat oblique position; fig. 7 in profile.)
 Fig. 8. *Skeletonema costatum*, var. *spiralis*, Mer.
 Figs. 9, 10. Intermediate forms between *Biddulphia* (*Triceratium*) *alternans*, Bail., and *varietas variabilis*, Brightw. The puncta are not represented.
 Figs. 11, 12. *Asteromphalus malleus* (*malleiformis*), var. *pacifica*, Mer. $\frac{900}{1}$.
 Fig. 13. *Asteromphalus malleus* (*malleiformis*), Wallich, reproducing the figure of Wallich. $\frac{400}{1}$.
 Fig. 14. *Navicula Henedyi*, var. *subrostrata*, Mer.
 Fig. 15. Another variety of *N. Henedyi* from Tahiti.
 Figs. 16-21. *Spermatozonia antiquæ*, Leud. & Fortm.

LXVI.—*Some new African Theraphosoid Spiders in the British Museum.* By R. I. Pocock.

Family Theraphosidæ.

Subfamily EUMENOPHORINÆ, Poc.

Genus HYSTEROCRATES, Sim.

A few weeks ago the Trustees of the British Museum acquired by purchase seven large Theraphosoid spiders which were captured on the island of St. Thomas in the Gulf of Guinea, and were offered to the British Museum under the name *Selenocosmia Greeffi* of Karsch. Who may be responsible for the identification I know not, but examination showed the specimens to be referable to three perfectly distinct species, neither of which is identical with the species described by Karsch, if any reliance is to be placed on the description of the latter.

The species may be described as follows:—

Hysteroocrates didymus, sp. n.

? *Phoneyusa Greeffi* (Karsch), Simon, Hist. Nat. Araignées, i. p. 153 (1892).

♀.—*Colour.* Integument deep blackish brown, hairy clothing a rich ruddy olive-brown, with paler tips to the